UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,074	06/27/2003	Anuj Dhawan	297/157/3	7438

25297 7590 06/28/2006

JENKINS, WILSON, TAYLOR & HUNT, P. A.
3100 TOWER BLVD
SUITE 1200
DURHAM, NC 27707

EXAMINER	
PIZIALI, ANDREW T	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,074	DHAWAN ET AL.	
	Examiner	Art Unit	
	Andrew T. Piziali	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-107* is/are pending in the application.

4a) Of the above claim(s) *5-9,22-96 and 102-107* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,10-21 and 97-101* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/30/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 5/10/2006 has been entered. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. As acknowledged by the applicant, newly submitted claims 102-107 are withdrawn as being dependent on withdrawn claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 4, 97 and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 2,073,933 to Herbst in view of anyone of USPN 3,277,564 to Webber et al. (hereinafter referred to as Webber), USPN 4,931,616 to Usui et al. (hereinafter referred to as Usui), or USPN 4,590,120 to Klein.

Regarding claims 1, 4, 97 and 98, Herbst discloses a coaxial conductive yarn structure comprising a first conductive yarn (5) extending in a first direction and having a plurality of first conductive strands being twisted together, a second conductive yarn (6) having a plurality of second conductive strands being twisted together, the second conductive yarn being wrapped around the first conductive yarn in a second direction transverse to the first direction and substantially covering the first conductive yarn, and at least one insulating layer (20 and/or 23)

for electrically isolating the first and second conductive yarns from each other (see entire document including column 2, lines 3-22 and Figure 2).

Herbst is silent with regards to specific strand (monofilament yarn) diameters, therefore, it would have been necessary and thus obvious to look to the prior art for conventional diameters. Webber, Usui and Klein each provide this conventional teaching showing that it is known in the electric wire art to use metallic strands having a diameter of 20 microns or less (see entire documents including column 1, lines 14-58 of Webber, column 1, lines 7-44 of Usui and the paragraph bridging columns 1 and 2 of Klein). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the diameter of the strand (monofilament yarn) less than 20 microns, motivated by the expectation of successfully practicing the invention of Herbst and because it is understood by one of ordinary skill in the art that the strand diameter determines properties such as flexibility and conductivity and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding the first (5) and second (6) conductive yarns exhibiting at least one of sufficient flexibility, conformability, resiliency, bending characteristics, and recovery for incorporation in a wearable garment, considering that Figure 2 illustrates the yarns as flexible, and considering that the yarns are substantially identical to the yarns disclosed in the current specification (small diameter twisted metal strands), it appears that the first and second yarns inherently possess at least one, if not all, of the claimed properties.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and

prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Regarding claim 4, Herbst discloses that the insulating layer may be substantially uniform in thickness (Figure 2).

4. Claims 1, 4, 97 and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 1,745,096 to Jayne in view of anyone of USPN 3,277,564 to Webber, USPN 4,931,616 to Usui, or USPN 4,590,120 to Klein.

Regarding claims 1, 4, 97 and 98, Jayne discloses a coaxial conductive yarn structure comprising a first conductive yarn (see Figure 3) extending in a first direction and having a plurality of first conductive strands (1, 1' and 3) being twisted together, a second conductive yarn (4) having a plurality of second conductive strands being twisted together, the second conductive yarn being wrapped around the first conductive yarn in a second direction transverse to the first direction and substantially covering the first conductive yarn, and at least one insulating layer (see coatings on 4, 1, 1' and 3) for electrically isolating the first and second conductive yarns from each other (see entire document including page 2, column 1, lines 34-51 and the paragraph bridging pages 2 and 3).

Jayne is silent with regards to specific strand (monofilament yarn) diameters, therefore, it would have been necessary and thus obvious to look to the prior art for conventional diameters.

Webber, Usui and Klein each provide this conventional teaching showing that it is known in the electric wire art to use metallic strands having a diameter of 20 microns or less (see entire documents including column 1, lines 14-58 of Webber, column 1, lines 7-44 of Usui and the paragraph bridging columns 1 and 2 of Klein). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the diameter of the strand (monofilament yarn) less than 20 microns, motivated by the expectation of successfully practicing the invention of Jayne and because it is understood by one of ordinary skill in the art that the strand diameter determines properties such as flexibility and conductivity and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding the first (5) and second (6) conductive yarns exhibiting at least one of sufficient flexibility, conformability, resiliency, bending characteristics, and recovery for incorporation in a wearable garment, considering that Figure 3 illustrates the yarns as flexible, and considering that the yarns are substantially identical to the yarns disclosed in the current specification (small diameter twisted metal strands), it appears that the first and second yarns inherently possess at least one, if not all, of the claimed properties.

Regarding claim 4, Jayne discloses that the insulating layer may be substantially uniform in thickness (Figure 3).

5. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 2,073,933 to Herbst in view of anyone of USPN 3,277,564 to Webber, USPN 4,931,616 to Usui, or USPN 4,590,120 to Klein as applied to claims 1, 4, 97 and 98 above, and further in view of USPN 3,795,760 to Raw et al. (hereinafter referred to as Raw).

Regarding claim 2, Herbst discloses that the first and second strands are conductive, but Herbst does not mention any specific materials. Herbst is silent with regards to specific materials, therefore, it would have been necessary and thus obvious to look to the prior art for conventional materials. Raw provides this conventional teaching showing that it is known in the radio frequency cable art (column 1, lines 6-17) to use metal or an alloy as a conductor (see entire document including column 1, lines 18-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the conductors from metal or an alloy motivated by the expectation of successfully practicing the invention of Herbst.

Regarding claim 3, Herbst is silent with regards to specific insulating materials, therefore, it would have been necessary and thus obvious to look to the prior art for conventional materials. Raw provides this conventional teaching showing that it is known in the radio frequency cable art (column 1, lines 6-17) to use insulating materials such as PVC, rubber, or the like (column 3, lines 24-68). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the insulating material from PVC, rubber, or the like motivated by the expectation of successfully practicing the invention of Herbst.

6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 1,745,096 to Jayne in view of anyone of USPN 3,277,564 to Webber, USPN 4,931,616 to Usui, or USPN 4,590,120 to Klein as applied to claims 1, 4, 97 and 98 above, and further in view of USPN 3,795,760 to Raw.

Regarding claim 2, Jayne discloses that the first and second strands are conductive, but Jayne does not mention any specific materials. Jayne is silent with regards to specific materials, therefore, it would have been necessary and thus obvious to look to the prior art for conventional

materials. Raw provides this conventional teaching showing that it is known in the radio frequency cable art (column 1, lines 6-17) to use metal or an alloy as a conductor (see entire document including column 1, lines 18-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the conductors from metal or an alloy motivated by the expectation of successfully practicing the invention of Jayne.

Regarding claim 3, Jayne is silent with regards to specific insulating materials, therefore, it would have been necessary and thus obvious to look to the prior art for conventional materials. Raw provides this conventional teaching showing that it is known in the radio frequency cable art (column 1, lines 6-17) to use insulating materials such as PVC, rubber, or the like (column 3, lines 24-68). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the insulating material from PVC, rubber, or the like motivated by the expectation of successfully practicing the invention of Jayne.

7. Claims 10-12 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,906,004 to Lebby et al. (hereinafter referred to as Lebby) in view of USPN 2,073,933 to Herbst in view of USPN 4,552,989 to Sass.

Regarding claims 10-12 and 15-21, Lebby discloses a woven textile fabric that may be used to interconnect portable electronics (AC source) or serve as an antenna for signals (column 2, lines 25-39), comprising conductive fibers running in parallel direction (see entire document including column 3, lines 37-62). Lebby discloses that the fibers may be any conductive fiber that is capable of transmitting a current (paragraph bridging columns 5 and 6), but Lebby does not specifically mention the claimed conductive yarn structure.

Herbst discloses a coaxial conductive yarn structure comprising a first conductive yarn

(5) extending in a first direction and having a plurality of first conductive strands being twisted together, a second conductive yarn (6) having a plurality of second conductive strands being twisted together, the second conductive yarn being wrapped around the first conductive yarn in a second direction transverse to the first direction and substantially covering the first conductive yarn, and at least one insulating layer (20 and/or 23) for electrically isolating the first and second conductive yarns from each other (see entire document including column 2, lines 3-22 and Figure 2). Absent a showing of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the conductive fibers of Lebby in any known conductive fiber structure, such as the conductive yarn structure taught by Herbst, because Herbst discloses that the cable is capable of distributing current and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability.

Herbst discloses that the inner conductor (5) may be connected to ground while the outer conductor (6) receives the high potential (page 1, column 2, lines 10-37), but Herbst does not specifically mention connecting the inner conductor (5) to the higher potential while connecting the outer conductor (6) to ground. Sass discloses that it is known in the art to connect the outer conductor of a coaxial structure to ground while connecting the inner conductor to the higher potential (se entire document including the paragraph bridging columns 2 and 3). Absent a showing of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to connect a ground to either of the two conductors, because both conductors are capable of carrying a current and because it is within the general skill of a worker in the art to select a ground wire on the basis of its suitability.

Regarding the claimed blocking of electromagnetic fields, considering the substantially identical woven electrical network taught by the applied prior art, compared to the claimed woven electrical network, it appears that the property would be inherent.

Regarding claims 11 and 12, Herbst discloses that inner and outer conductive yarns each include a plurality of conductive twisted strands (see Figure 2 and page 2, column 1, lines 3-22).

Regarding claim 15, Herbst discloses that the insulating layer may be substantially uniform in thickness (see Figure 3).

Regarding claims 16 and 17, Lebby discloses that the first and second conductive yarns are spaced from each other in the fabric by a predetermined distance (column 5, lines 35-60). Lebby does not mention specific spacing distances, but Lebby does disclose that spacing of the fibers is dependent on the exact usage (column 5, lines 35-60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the distance between yarns, as taught by Lebby, because it is understood by one of ordinary skill in the art that the distance between fibers determine properties such fabric weight and breathability, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claims 18 and 19, Lebby discloses that a plurality of nonconductive yarns may be woven in the fabric (column 3, lines 37-62).

Regarding claim 19, Lebby does not mention specific non-conductive yarn materials, but Lebby does disclose that the non-conductive overcoating for the fibers may comprise a plastic material such as polyimide (column 4, lines 8-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the non-conducting yarns

from any suitable non-conductive material, such as polyimide or the like, because it is within the general skill of a worker in the art to select a known material on the basis of its suitability.

Regarding claims 20 and 21, Lebby discloses that the conductive yarns may comprise the warp or weft yarns as long as they separated by non-conductive fibers (see column 3, lines 36-62 and Figures 1 and 3).

8. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,906,004 to Lebby in view of USPN 2,073,933 to Herbst in view of USPN 4,552,989 to Sass as applied to claims 10-12 and 15-21 above, and further in view of USPN 3,795,760 to Raw.

Regarding claim 13, Herbst discloses that the first and second strands are conductive, but Herbst does not mention any specific materials. Herbst is silent with regards to specific materials, therefore, it would have been necessary and thus obvious to look to the prior art for conventional materials. Raw provides this conventional teaching showing that it is known in the radio frequency cable art (column 1, lines 6-17) to use metal or an alloy as a conductor (see entire document including column 1, lines 18-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the conductors from metal or an alloy motivated by the expectation of successfully practicing the invention of Herbst.

Regarding claim 14, Herbst is silent with regards to specific insulating materials, therefore, it would have been necessary and thus obvious to look to the prior art for conventional materials. Raw provides this conventional teaching showing that it is known in the radio frequency cable art (column 1, lines 6-17) to use insulating materials such as PVC, rubber, or the like (column 3, lines 24-68). Therefore, it would have been obvious to one having ordinary skill

in the art at the time the invention was made to make the insulating material from PVC, rubber, or the like motivated by the expectation of successfully practicing the invention of Herbst.

9. Claims 99-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,906,004 to Lebby in view of USPN 2,073,933 to Herbst in view of USPN 4,552,989 to Sass as applied to claims 10-12 and 15-21 above, and further in view of anyone of USPN 3,277,564 to Webber, USPN 4,931,616 to Usui, or USPN 4,590,120 to Klein.

Regarding claims 99-101, Herbst is silent with regards to specific strand (monofilament yarn) diameters, therefore, it would have been necessary and thus obvious to look to the prior art for conventional diameters. Webber, Usui and Klein each provide this conventional teaching showing that it is known in the electric wire art to use metallic strands having a diameter of 20 microns or less (see entire documents including column 1, lines 14-58 of Webber, column 1, lines 7-44 of Usui and the paragraph bridging columns 1 and 2 of Klein). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the diameter of the strand (monofilament yarn) less than 20 microns, motivated by the expectation of successfully practicing the invention of Herbst and because it is understood by one of ordinary skill in the art that the strand diameter determines properties such as flexibility and conductivity and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 99, considering that Figure 2 illustrates the yarns as flexible, and considering that yarns are substantially identical to the yarns disclosed in the current specification (small diameter twisted metal strands), it appears that the first and second yarns inherently possess at least one, if not all, of the claimed properties.

Response to Arguments

10. Applicant's arguments have been considered but are mostly moot in view of the new grounds of rejection.

Regarding the restriction requirement, the applicant asserts that claims 34, 44-47, 87-89 and 94 are readable on elected Species 1 and Sub-Species 1. The examiner respectfully disagrees. Claim 34, from which claims 44-47 depend, claims first and second conductive threads, each conductive thread including an inner conductor and an outer insulating layer surrounding the inner conductor, the first and second conductive threads extending in the same direction. The first conductive thread (102) and second conductive thread (106) of Figure 1 clearly do not extend in the same direction. Claim 87, from which claims 88-89 and 94 depend, claims interlocked conductive threads. The conductive threads of Figure 3 clearly do not interlock.

The applicant alleges that the coaxial conductive yarn structure disclosed by Herbst could not be incorporated into a fabric because it is "unsuitable for a weaving process," but this argument is not persuasive because the applicant fails to provide evidence to support this allegation.

Conclusion

11. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

atp

6/22/06

ANDREW T. PIZIALI
PATENT EXAMINER